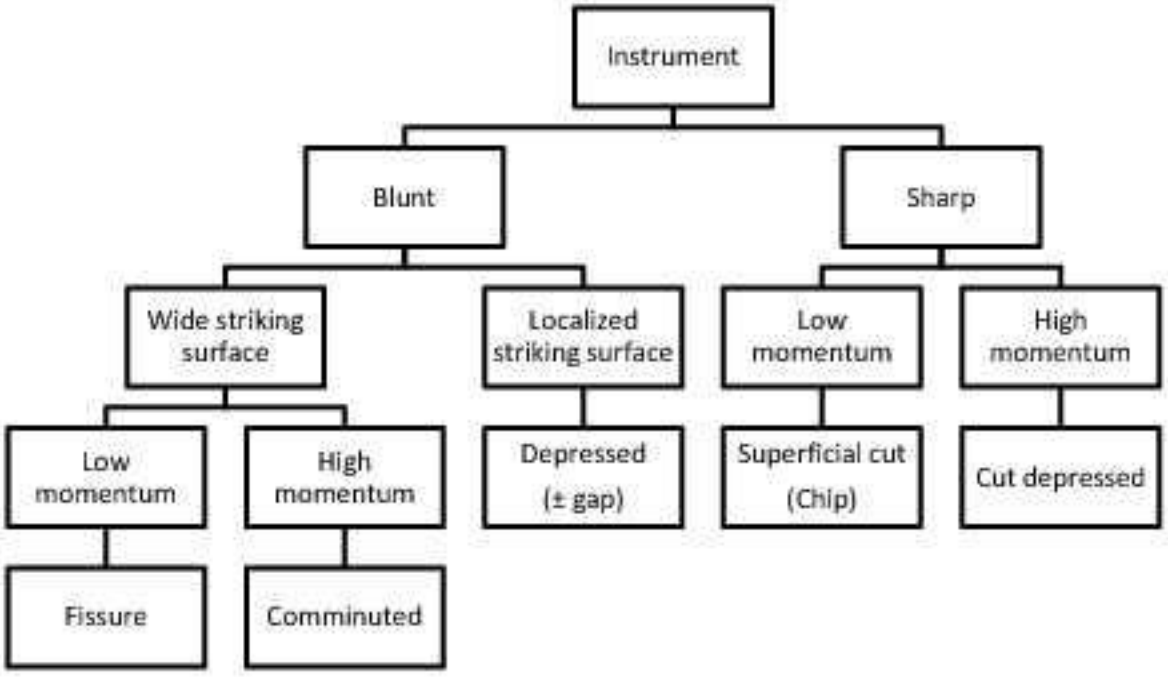
www.1aim.net

SKULL FRACTURES



Points to be fulfilled in each specimen

I. Injury description
   1. Number: one, two or multiple
   2. Shape:
      a. Fissure → linear
      b. Depressed → oval, rounded or elongated
      c. Comminuted → irregular
      d. Cut → triangular, rectangular, elliptical or linear
   3. Site: in relation to anatomic landmarks
   4. Size
   5. Edges
      a. Fissure → coapt edges (no displacement or gaping)
      b. Depressed → localized bony depression
      c. Bony gap due to depressed or comminuted → well defined, roughly cut
      d. Superficial cut → sharp regular edges with 2 acute angels in outer table only
      e. Cut depressed→ sharply cut ± shelving and depression

www.1aim.net

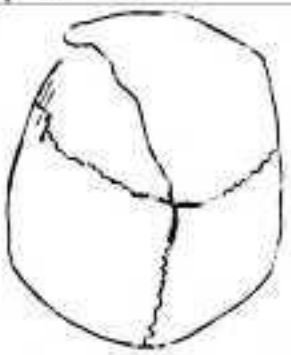
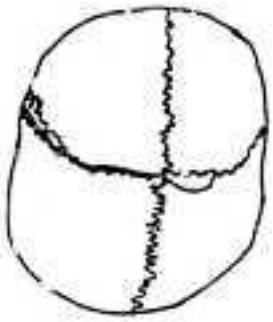
6. Type
7. Post-trauma changes:
    a. Sepsis → eroded dirty edges
    b. Healing → smooth ivory-like edges
    c. Surgical interference in the form of trephine & bone nibbling
8. Antemortem or postmortem: all are AM due to
    a. Traces of hemorrhage
    b. Sepsis
    c. Healing
    d. Surgical interference
    e. AM signs are absent due to rapidity of death, but it could be PM

II. Causative instrument: heavy
1. Fissure → blunt, wide surface, low momentum
2. Comminuted → blunt, wide surface, high momentum
3. Depressed → blunt, localized surface, high momentum
4. Superficial cut → sharp, low momentum
5. Cut depressed → sharp, high momentum

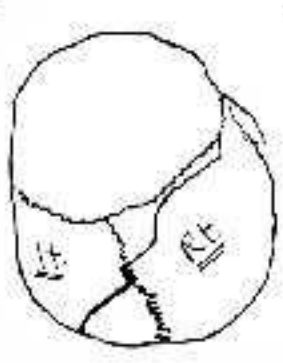
III. Causes of death
1. No sepsis, healing, surgical interference:
    a. Brain compression
    b. Brain laceration
    c. Neurogenic shock
    d. Scalp hemorrhage
2. Surgical interference → operative complications (in addition to the previous causes)
3. Healing → complications of permanent infirmity: heat stroke, transmission of minor trauma to brain, epilepsy, intracranial infections
4. Sepsis → intracranial infection (meningitis, encephalitis, abscess, cavernous sinus thrombosis), systemic infection

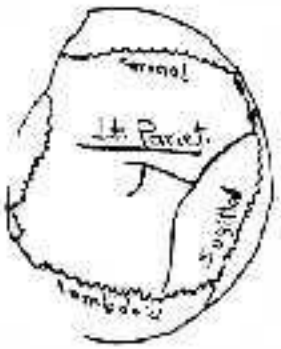
www.1aim.net

Fissure fractures

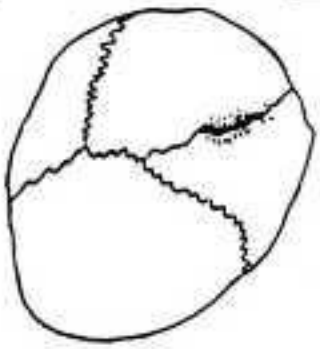
Specimen	Injury description
	A linear fracture extends between the cut edge of left frontal bone and the bregma causing multiple diastatic fissures in the sagittal and coronal sutures around it. It measures about.....cm with coapt edges. It is a fissure fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	A linear fracture extends between the cut edge of left frontal bone into the left coronal suture causing diastatic fissure to cross the sagittal suture and tails in the right parietal bone. It measures about.....cm with coapt edges. It is a fissure fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.

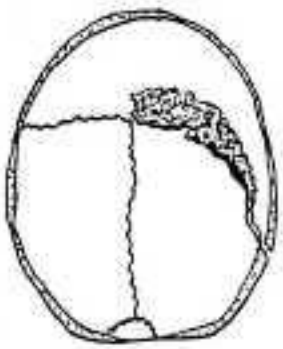
www.1aim.net





A linear fracture starts in the left parietal bone to give 3 branches, one runs as a step fracture in the sagittal suture then continues in the right parietal bone ending just behind the right coronal suture and measures about ...cm. One of the other 2 branches passes downwards and to the left and measures ...cm while the other passes backwards to meat lambdoid suture and is about...cm. edges are coapt. They are fissure fractures. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.





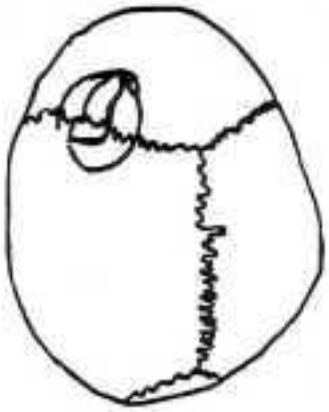
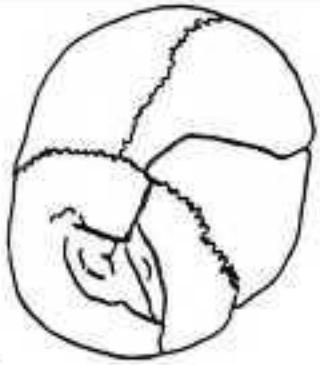
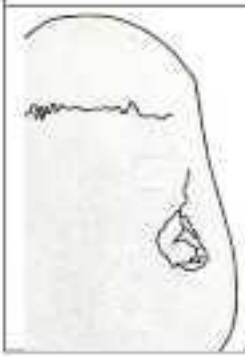
A linear fracture extends between the cut edge of left parietal bone and the left coronal suture just beside the bregma. It measures about.....cm with coapt edges at both ends. The edges in the middle are separated, markedly irregular, necrotic and glistening with deposition of infected osteoid tissue on the inner table due to septic erosion with healing. It is a fissure fracture. It is AM as evidenced by the presence of sepsis.

N.B.: Causes of death: Complications of sepsis:

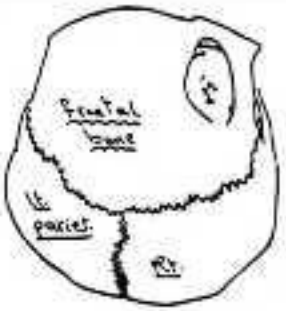
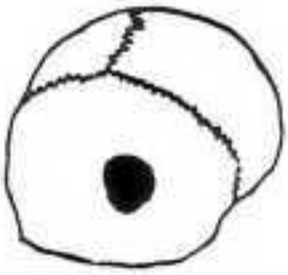
a) Intracranial infection (meningitis, encephalitis, abscess, cavernous sinus thrombosis)
b) Systemic infection

www.1aim.net

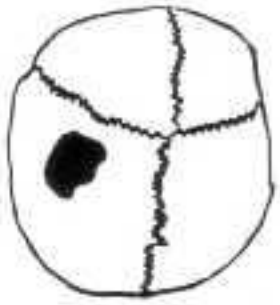
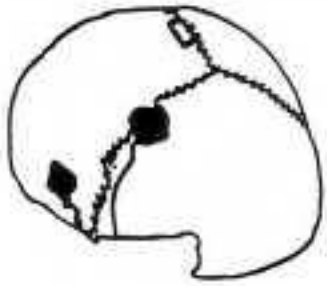
Localized depressed fractures

Specimen	Injury description
	A single nearly rounded depression of both outer and inner tables is found in the left frontal bone encroaching on both left coronal suture and parietal bone. It is about ….cm in diameter. Edges are irregular and rough. It is a localized depressed fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	A single nearly oval depression of both outer and inner tables is found in the middle of the frontal bone. It is about …x…cm. Edges are irregular and rough. It is a localized depressed fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	A single nearly oval depression of both outer and inner tables is found in the middle of the frontal bone. It is about …x…cm. Edges are irregular and rough. It is a localized depressed fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	A single nearly square depression of both outer and inner tables is found in the right parietal bone. It is about …x…cm. Edges are irregular and rough. It is a localized depressed fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.

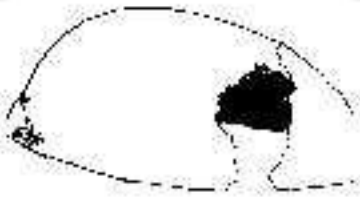
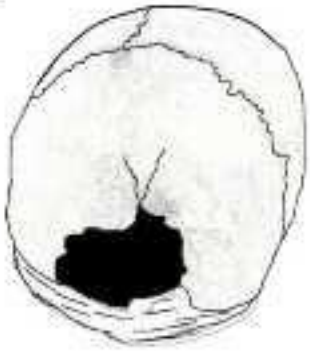
www.1aim.net

	A single elongated depression of both outer and inner tables is found in the right parietal bone encroaching on both right coronal suture and frontal bone. It is about ….cm in length. Edges are irregular and rough. It is a localized depressed fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	A single oval depression of both outer and inner tables is found in the right frontal bone….cm from right coronal suture. It is about …x…cm. Edges are irregular and rough. It is a localized depressed fracture. The dura is separated from the vault's inner aspect on both sides probably due to extradural hemorrhage. There is no sepsis, healing or surgical interference. It is an AM injury as evidenced by the extradural hemorrhage.
	A single rounded bony gap is found in the left frontal bone….cm from left coronal suture. It is about ….cm in diameter. Edges are well defined and roughly cut. It is mostly a bony gap due to localized depressed fracture. There is no beveling, sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.

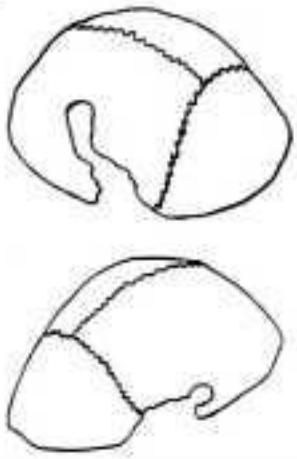
www.1aim.net

	A single irregular bony gap is found in the left parietal bone....cm from left coronal suture and....cm away from sagittal suture. It measures about ...x...cm. Edges are well defined and roughly cut. It is mostly a bony gap due to localized depressed fracture. There is no beveling, sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	A single rectangular bony gap is found in the left parietal bone beside the meeting between sagittal and left lambdoid suture. It measures about...x...cm. Edges are irregular and roughly cut. It is mostly a bony gap due to localized depressed fracture. A diastatic fissure runs through the right lambdoid sutures. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	Two rectangular bony gaps are seen. One of them measures...x...cm and lies in the right frontal bone encroaching on both right coronal suture and parietal bone. The other measures...x...cm and lies in the right parietal bone....cm posterior to right coronal suture. The edges of both are irregular and roughly cut with traces of hemorrhage. They are mostly bony gaps due to localized depressed fractures. There is single rectangular depression of both outer and inner tables in the right parietal bone beside the sagittal suture....cm from bregma. It measures....x...cm with irregular rough edges. It is a depressed fracture. In all injuries there is no sepsis, healing or surgical interference. They are AM injuries as evidenced by the traces of blood.

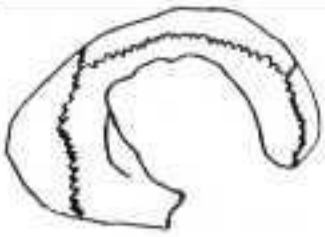
www.1aim.net

	A single elongated bony gap is seen in the left parietal bone just behind the left coronal suture near the bone's cut edge and runs backwards and upwards. It measures...x...cm. It's edges are roughly cut and irregular with multiple radiating fissures. It is mostly due to localized depressed fracture. There are also 2 oval depressions of both outer and inner tables found in the middle of the frontal bone near its cut edge. Each measures about ...x...cm. Edges are irregular and rough. They are localized depressed fractures. There is no sepsis, healing or surgical interference. They are mostly AM but rapidity of death explains the absence of AM signs, but they could be PM.
	There is single irregular bony gap in the right frontoparietal region, measuring about ....x.... cm. Edges are rough and irregular but show semicircular smooth area of trephine operation and multiple irregular festoons of bone nibbling. There is neither sepsis nor healing. It is most probably bony gap due to localized depressed fracture. It is an AM injury.
	There is single irregular bony gap in the middle of the frontal bone about ...x...cm. Edges are well defined, rough and irregular with semicircular smooth area of trephine operation and multiple irregular festoons of bone nibbling. There is neither sepsis nor healing. This bony gap is most probably due to localized depressed fracture. It is an AM injury.

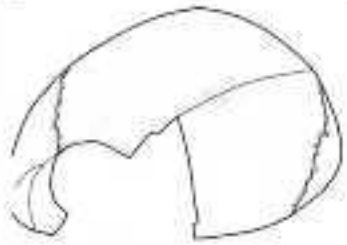
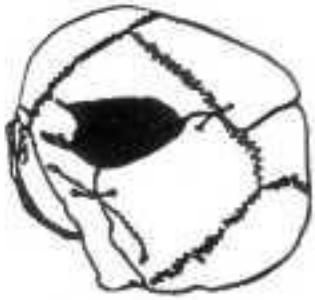
www.1aim.net

	There are 2 elongated irregular bony gaps, one in the right temporoparietal region about ...x...cm, the other lies in the left temporoparietal region and measures ...x...cm. Edges of both are irregular but show smoothening by healing and semicircular areas of trephine operation. There is no sepsis. They are most probably bony gaps due to localized depressed fractures. They are AM. N.B.: Causes of death: complications of permanent infirmity

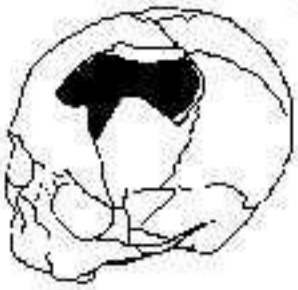
Comminuted fractures

Specimen	Injury description
	There is single irregular bony gap in the left parieto-occipital region about ...x...cm. Edges are well defined, rough and irregular. It is most probably due to comminuted fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	There is single irregular bony gap in the left parietotemporal region about ...x...cm. Edges are well defined, rough and irregular with a radiating fissure from the anterior margin. It is most probably due to comminuted fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.

www.1aim.net

	There is single irregular bony gap in the left parietotemporal region encroaching on the left frontal bone, about ...x...cm. Edges are well defined, rough and irregular with 2 radiating fissure from the anterior and posterior margins. This bony gap is most probably due to comminuted fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	There is single irregular bony gap in the left parietal region about ...x...cm. Edges are well defined, rough and irregular with 2 radiating fissures, one extends medially to meet the sagittal suture and the other extends laterally and downwards as a base fracture. This bony gap is most probably due to comminuted fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	There is single irregular bony gap in the right parietal region about ...x...cm. Edges are well defined, rough and irregular with multiple radiating fissures. There is area of bone comminution in the right temporoparietal region. This bony gap is most probably due to comminuted fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.

www.1aim.net

	There is single irregular bony gap in the frontal region about ...x...cm. Edges are well defined, rough and irregular with 2 radiating fissures, one extends backwards into the left parietal bone and the other extends laterally and downwards. This bony gap is most probably due to comminuted fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	There is a single, almost square bony gap in the frontal region encroaching on the left parietotemporal region, about ...x...cm. Edges are well defined, rough and irregular. This bony gap is most probably due to comminuted fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	There is single irregular bony gap in the left frontal and parietotemporal region about ...x...cm. Edges are well defined, rough and irregular. This bony gap is most probably due to comminuted fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.
	There is single irregular bony gap in the right parietotemporal region about ...x...cm. Edges are well defined, rough and irregular with semicircular smooth area of trephine operation and multiple irregular festoons of bone nibbling. There is neither sepsis nor healing. This bony gap is most probably due to comminuted fracture. It is an AM injury.

www.1aim.net

	There is single irregular bony gap in the left parietotemporal region about ...x...cm. Edges are well defined, rough and irregular with semicircular smooth area of trephine operation and multiple irregular festoons of bone nibbling. There is neither sepsis nor healing. This bony gap is most probably due to comminuted fracture. It is an AM injury.
	There is single irregular bony gap in the left frontal region, measuring about ...x...cm. Edges are rough and irregular but show semicircular smooth area of trephine operation and multiple irregular festoons of bone nibbling. There is neither sepsis nor healing. It is most probably bony gap due to comminuted fracture. It is an AM injury. N.B.: Causes of death: 1- Operative complications 2- Brain compression 3- Brain laceration
	There is single irregular bony gap in the left parietal region about ...x...cm. Edges are irregular but show smoothening by healing and semicircular areas of trephine operation. There is no sepsis. This bony gap is most probably due to comminuted fracture. It is an AM injury.
	There are 3 bony gaps. The first one is irregular and lies in the right parietal region, about ...x...cm. Edges are markedly irregular and necrotic with deposition of infected osteoid tissue in the inner table due to sepsis and healing. The posterior margin shows semicircular area of trephine operation. This bony gap is most probably due to comminuted fracture. It is an AM injury. The second one is oblong, about ...x...cm and lies across the right lambdoid suture. Edges are smooth due to healing. There is neither sepsis nor

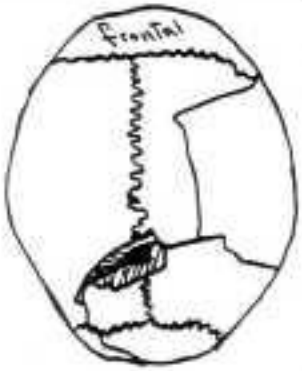
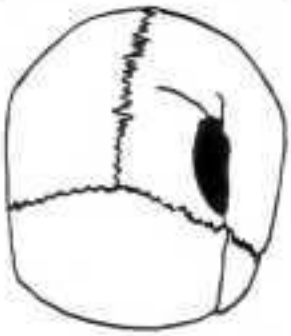
www.1aim.net

	surgical interference. It is mostly due to localized depressed fracture. The third bony gap lies in the right mastoid region. It is irregular in shape, about ...x...cm with marked irregular necrotic edges due to mastoiditis. There is no surgical interference. The 3 gaps are AM. N.B. Causative instruments: 1- The larger gap is caused by heavy blunt object with wide striking surface applied in high momentum. 2- The smaller gap is caused by heavy blunt object with localized striking surface applied in high momentum. N.B.: Causes of death: 1- Complications of sepsis: a) Intracranial infection (meningitis, encephalitis, abscess, cavernous sinus thrombosis). b) Systemic infection. 2- Complications of permanent infirmity: heat stroke, transmission of minor trauma to brain, epilepsy, intracranial infections.

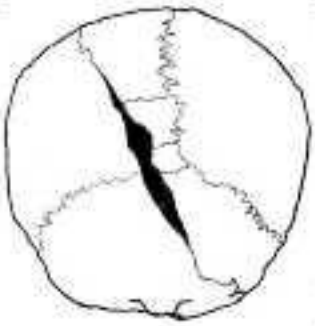
Cut fractures

Specimen	Injury description
	There are multiple linear injuries scattered allover the vault. The biggest (in left parietal bone) measures...cm while the smallest is about...cm. Edges are sharp and regular with 2 acute angels in outer table only. These are superficial cut fractures (chip fractures). There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM.

www.1aim.net

	N.B. Causes of death: 1- Neurogenic shock 2- Scalp hemorrhage 3- Other fatal injuries
	There is single elliptical bony gap in the posterior left parietal region, about ...x...cm. Edges are well defined and sharply cut with 2 acute angles. It is most probably due to cut fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM. N.B. Causative instrument: heavy sharp instrument with elliptical cross-section applied in high momentum (e.g. blade of an axe).
	There is single triangular bony gap that lies across the posterior ⅓ of the sagittal suture with its apex in the left parietal bone, about ...x...cm. Edges are well defined and sharply cut with one acute angle and 2 radiating fissures. It is most probably due to cut fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM. N.B. Causative instrument: heavy sharp instrument with triangular cross-section applied in high momentum (e.g. angle of an axe).
	There is single triangular bony in the left parietal bone with its apex directed anteriorly, about ...x...cm. Edges are well defined and sharply cut with one acute angle and multiple radiating fissures. It is most probably due to cut fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM. N.B. Causative instrument: heavy sharp instrument with triangular cross-section applied in high momentum (e.g. angle of an axe).

www.1aim.net

	A single spindle-shaped bony gap extends from the posterior left parietal region to the occipital bone, about ...x...cm. Edges are sharply cut and show shelving of inner table. The left edge shows some irregularity, while the right edge shows marked irregularity. There are also 2 acute angles with a fissure radiating from each. This gap is most probably due to cut fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM. N.B. Causative instrument: heavy semisharp instrument causing shelving applied in high momentum (e.g. grubber).
	A single irregular bony gap extends from the posterior right parietal region to the right frontal bone, about ...x...cm. Edges are sharply cut and irregular with shelving of inner table. The lateral edge shows multiple acute angles in addition to a small depressed area in its posterior part. This gap is most probably due to cut fracture. There is no sepsis, healing or surgical interference. It is mostly AM but rapidity of death explains the absence of AM signs, but it could be PM. N.B. Causative instrument: heavy semisharp instrument causing shelving applied **repeatedly** in high momentum (e.g. grubber).